The Future of Water & Electricity in the West

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California Municipal Utilities Association
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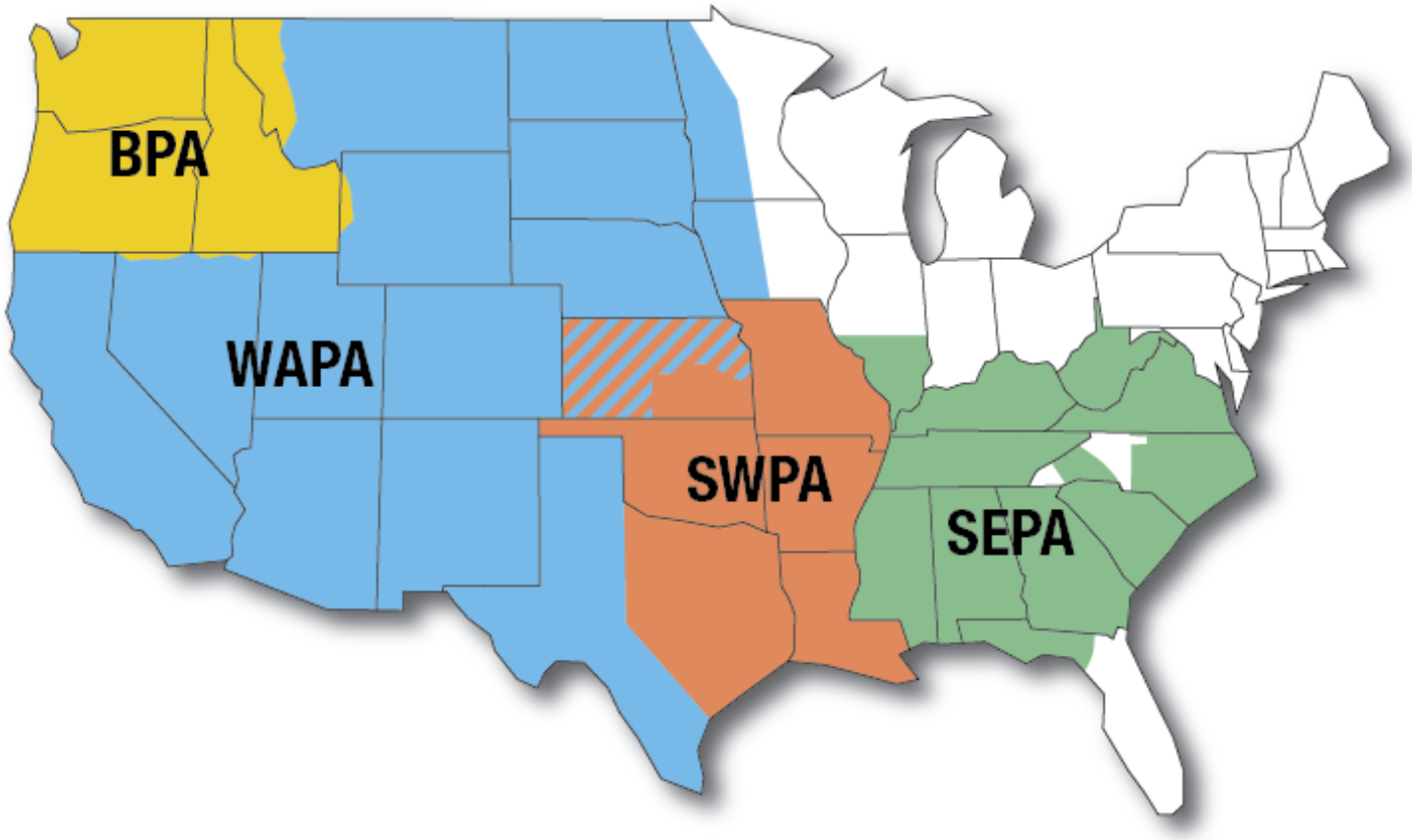
Western Area Power Administration

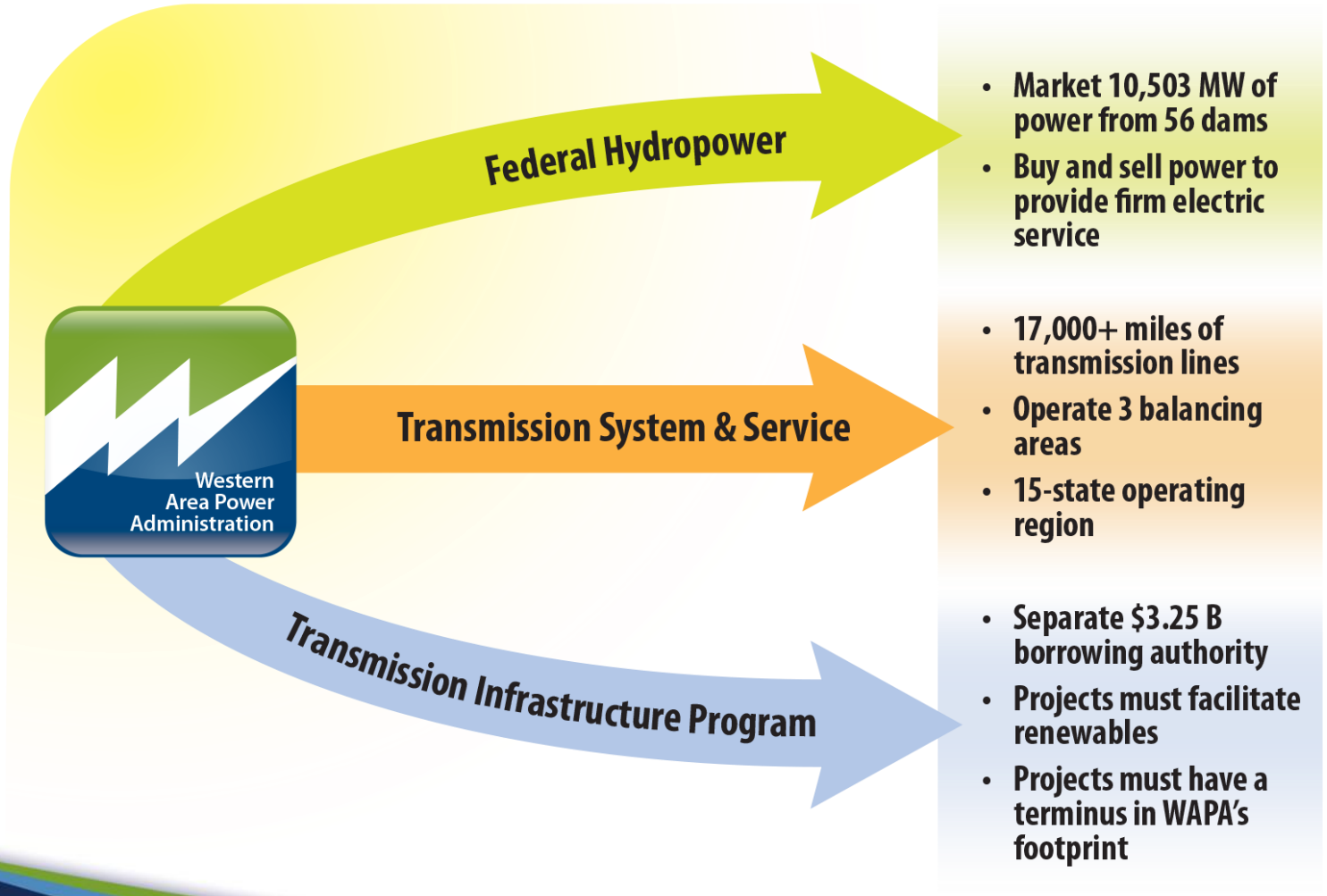
It all begins with water

Water-energy nexus

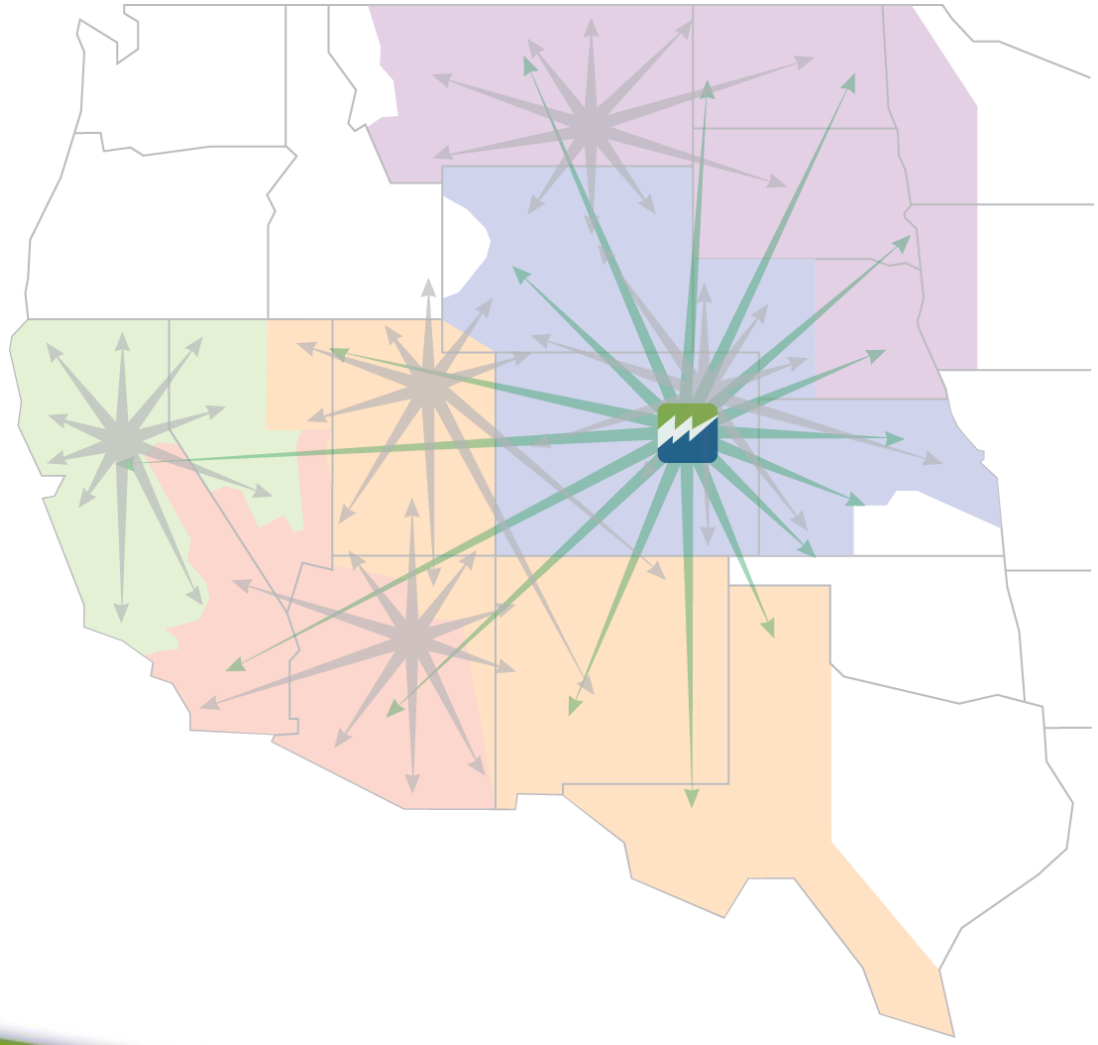
WAPA: Who we are



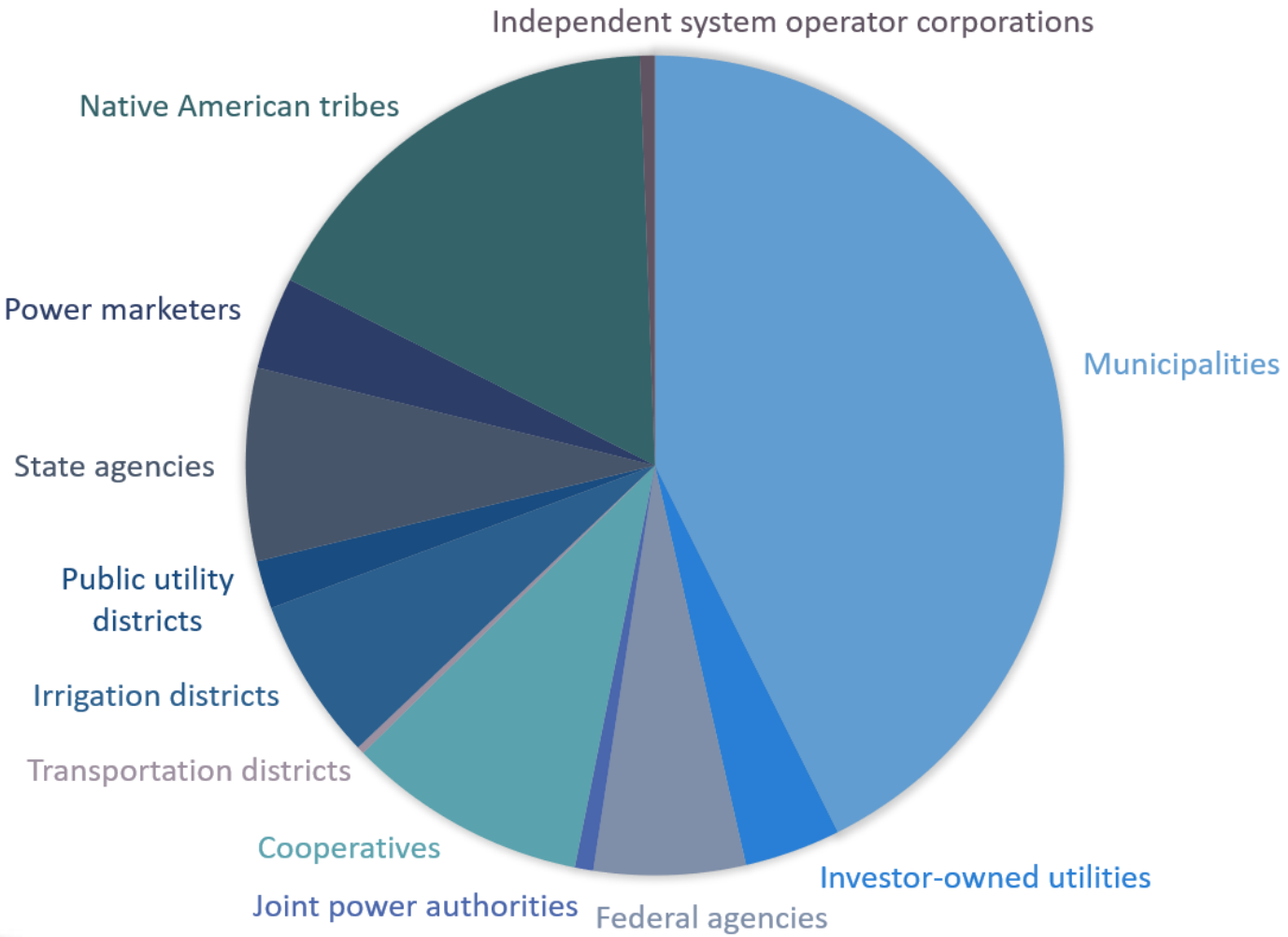
WAPA: What we do



WAPA: Where we are



WAPA: Who we serve



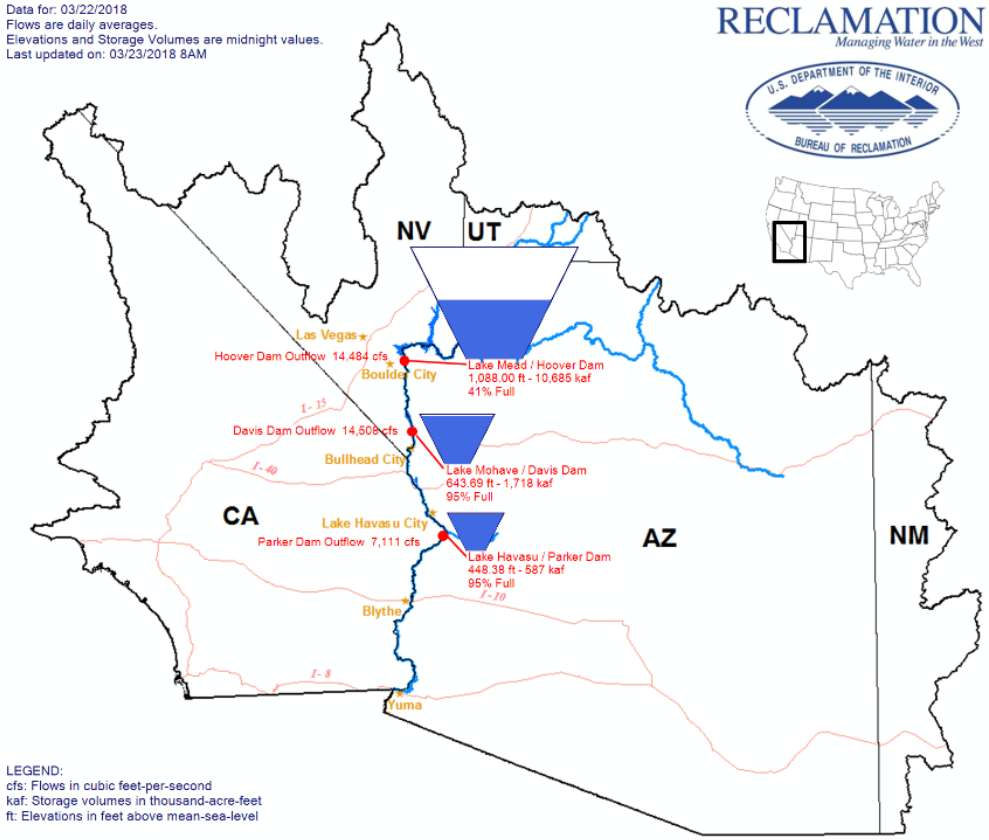
Our power comes from …

Water in the West

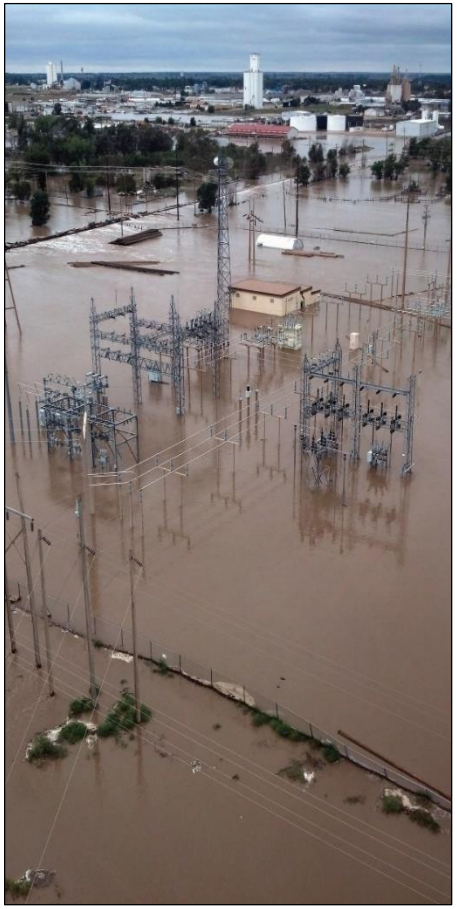
Parker-Davis issues

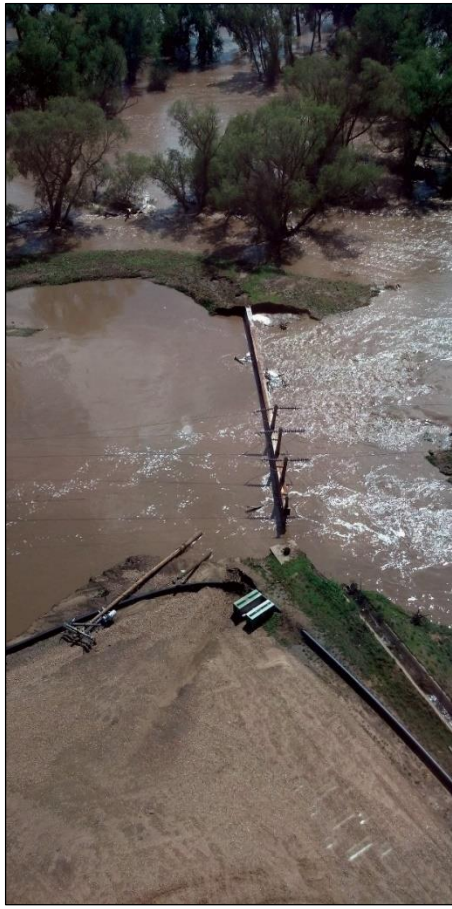
Lower Colorado River Teacup Diagram

Note: This web page shows a teacup diagram of reservoir elevations, storage contents, and flows for some of the Colorado River gages. The graphic shown below is a snapshot of river and reservoir conditions for the previous day. The hydrologic data on this website are provisional records collected by an automated process and are subject to change

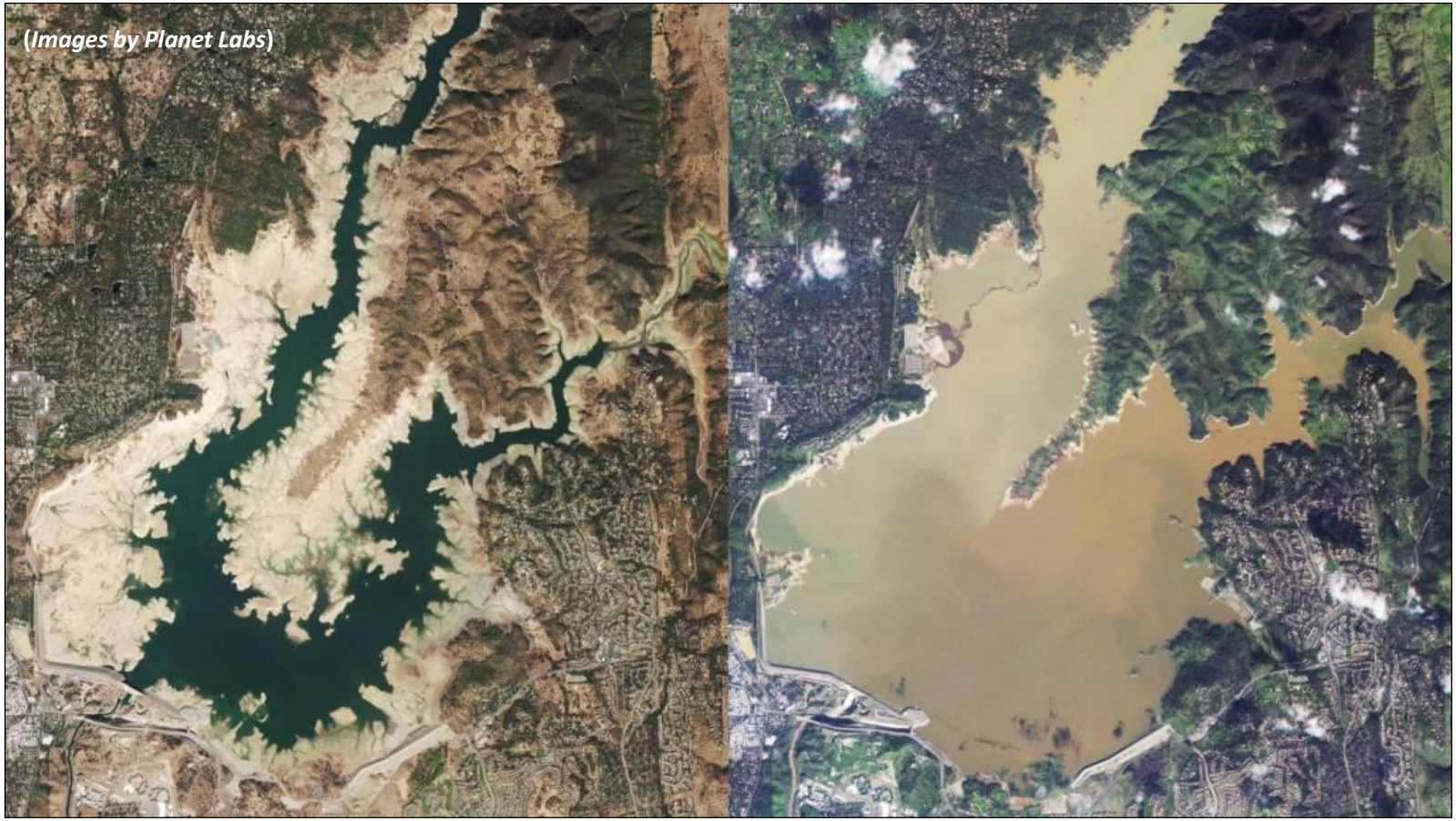


Conditions across footprint





Conditions across footprint



Folsom Lake: Oct. 26, 2015

Folsom Lake: Jan. 14, 2017

Conditions across footprint


Last Chance fire, 2012


SD ice storms, 2016

California snowpack

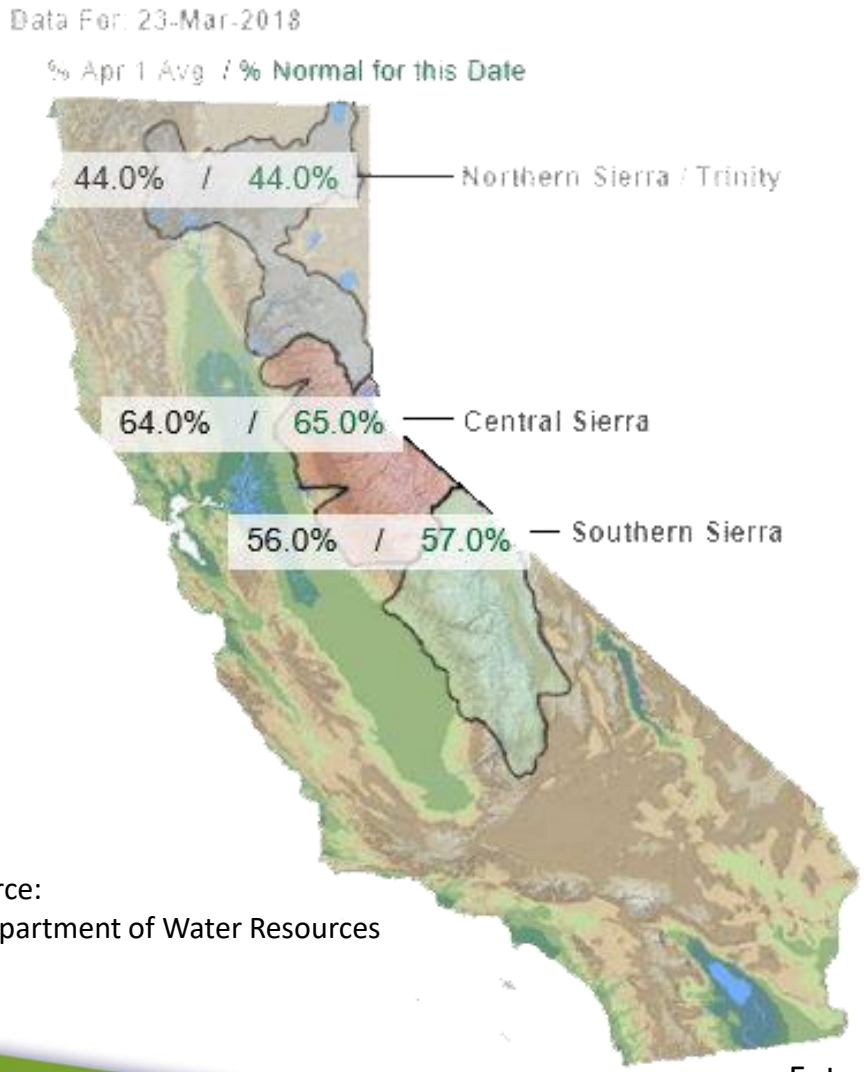


Image source:
CA.gov, Department of Water Resources

California snowpack

Statewide percentage of average to date – 56%

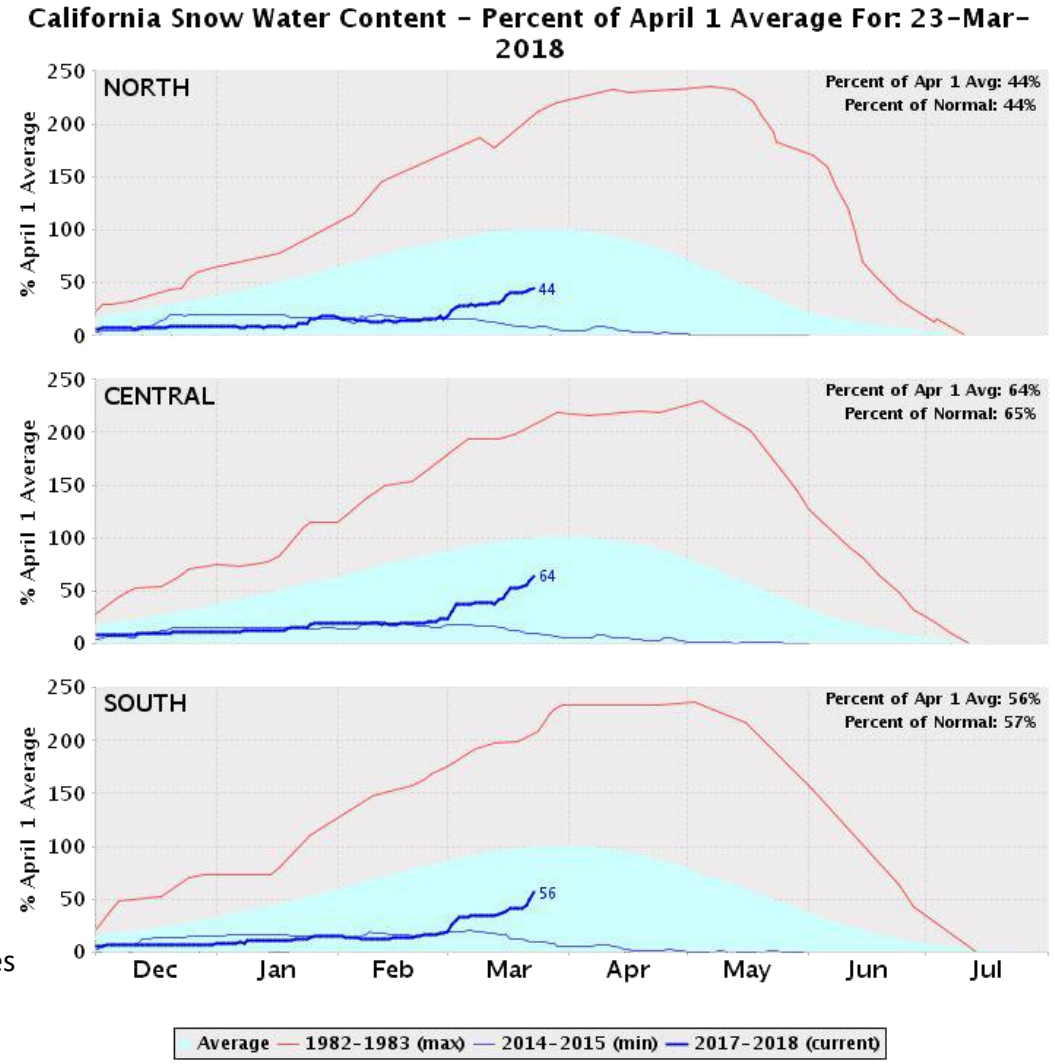
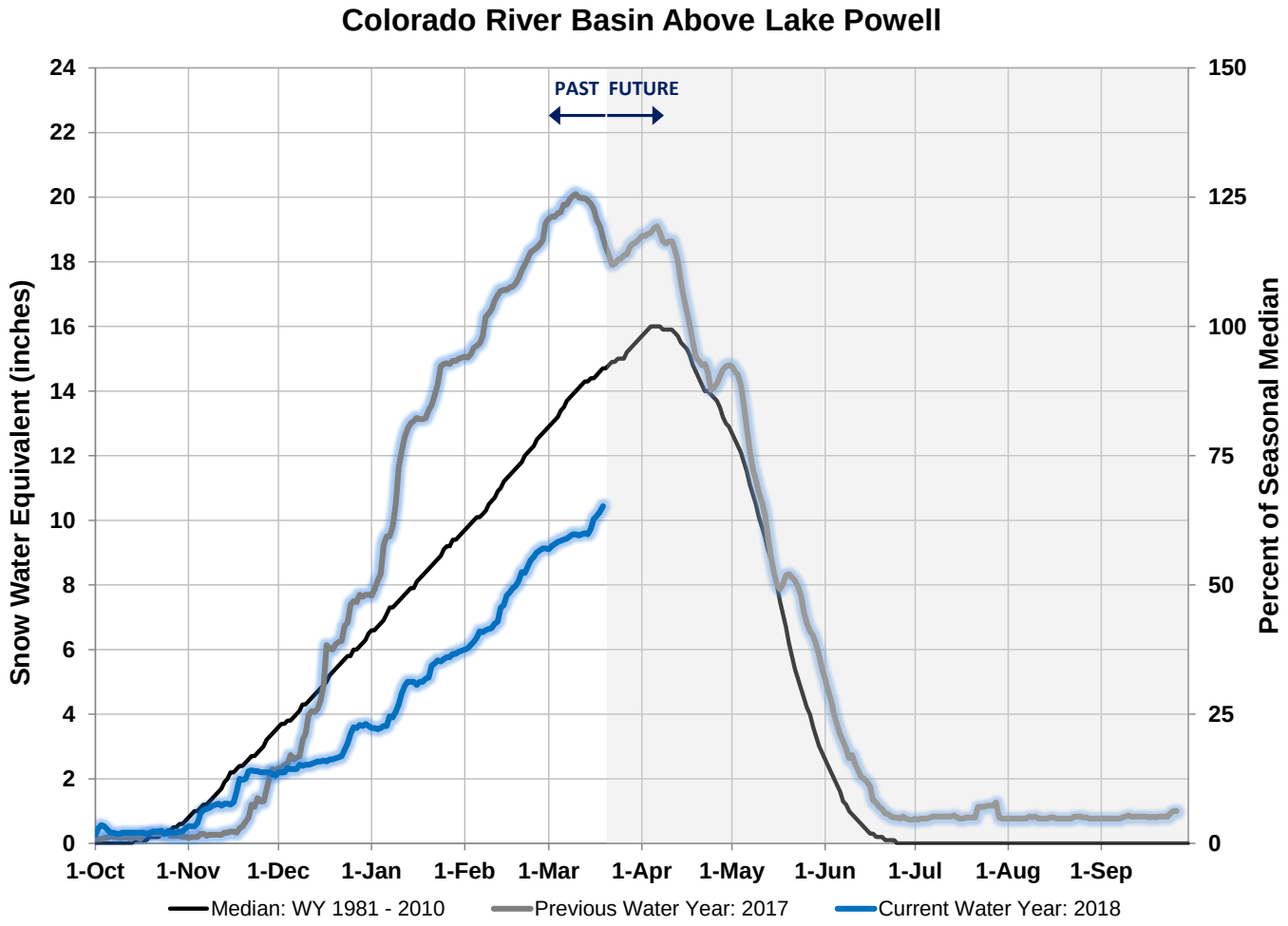


Image source:
CA.gov, Department of Water Resources

Oroville Dam, February 2017

(Photos by Mercury News)

Hoover hydrology



Regulatory environment

Acre Feet Bypassed from All GCD Experiments		
Number of Acre Feet Bypassed:	735,667	AF
Emissions if utilities use gas plants to make up for lost energy from Glen Canyon Dam:		
CO2 Emissions	375,741,920	lbs
SOX Emissions	33,105	lbs
NOX Emissions	562,785	lbs
Emissions if utilities use coal plants to make up for lost energy from Glen Canyon Dam:		
CO2 Emissions	744,531,787	lbs
SOX Emissions	4,303,652	lbs
NOX Emissions	1,986,301	lbs

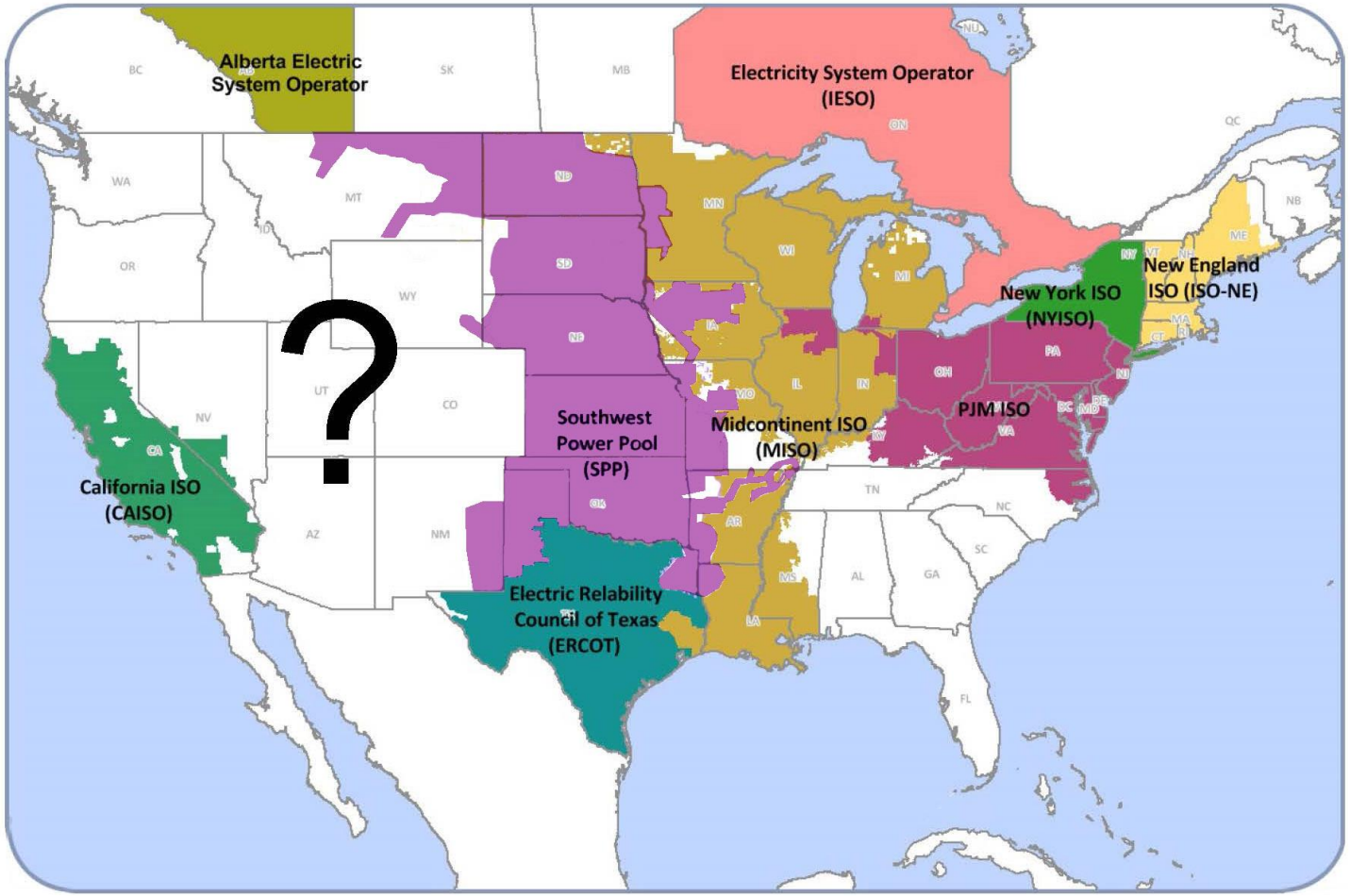
What Do These Numbers Mean?		
CO2 output equals the annual air emissions from this many cars:		
Gas plant emissions equal:	33,199	cars driven for a year
Coal plants emissions equal	65,783	cars driven for a year

Chart courtesy of Salt River Project

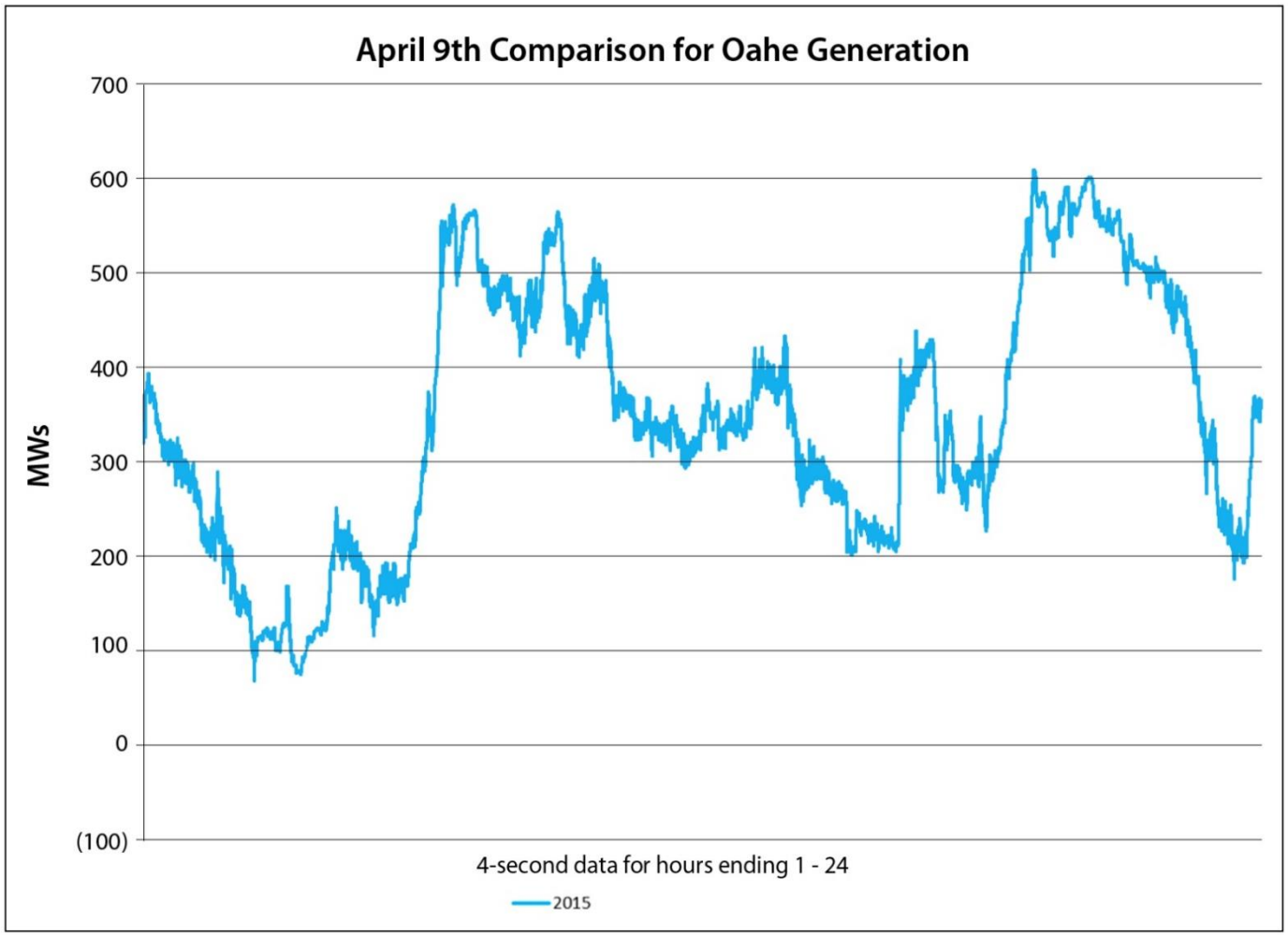
CVP Improvement Act

Photo credit: Bill_Dally via iStock

Markets in a hydro world



Oahe generation



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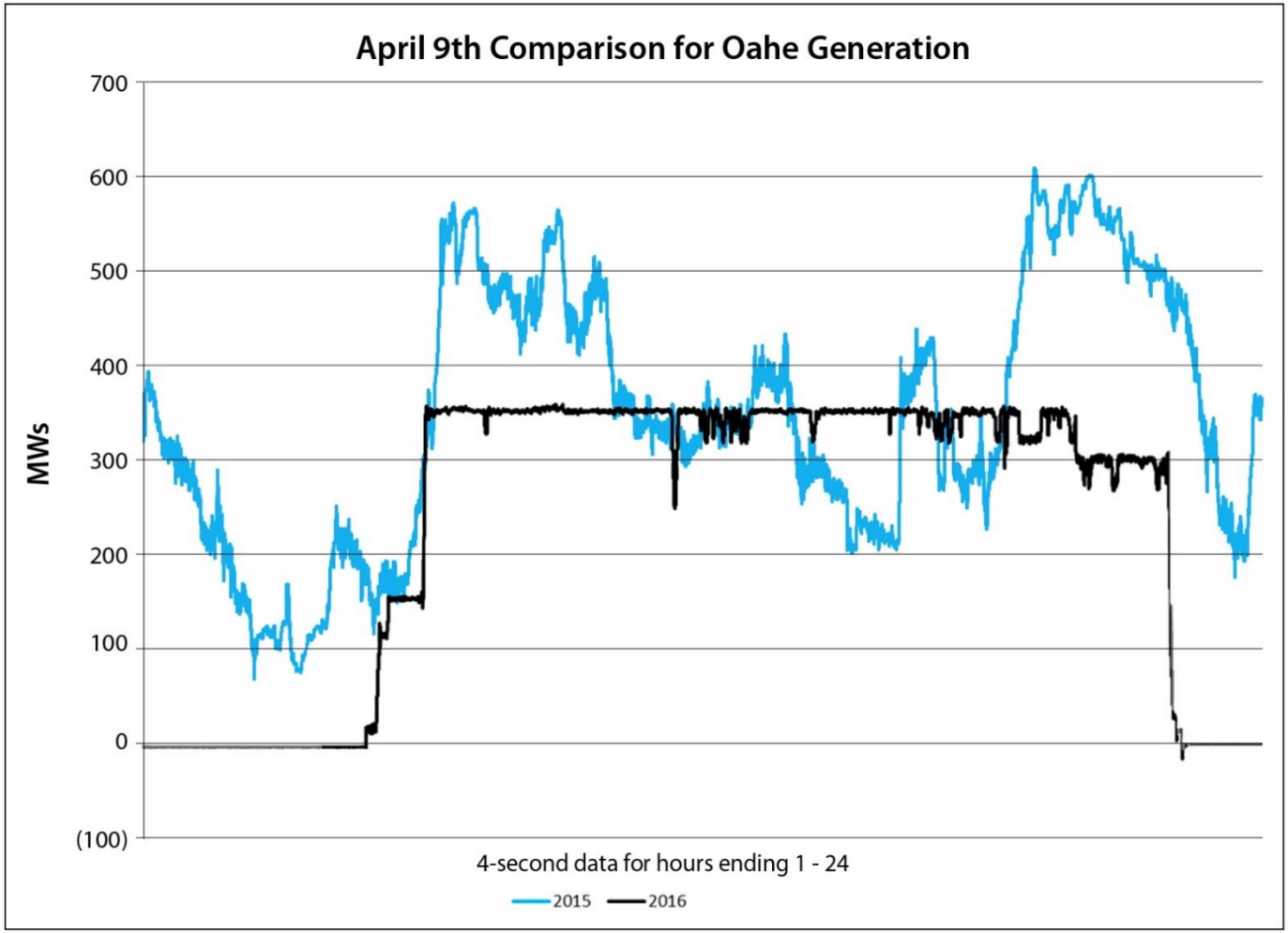

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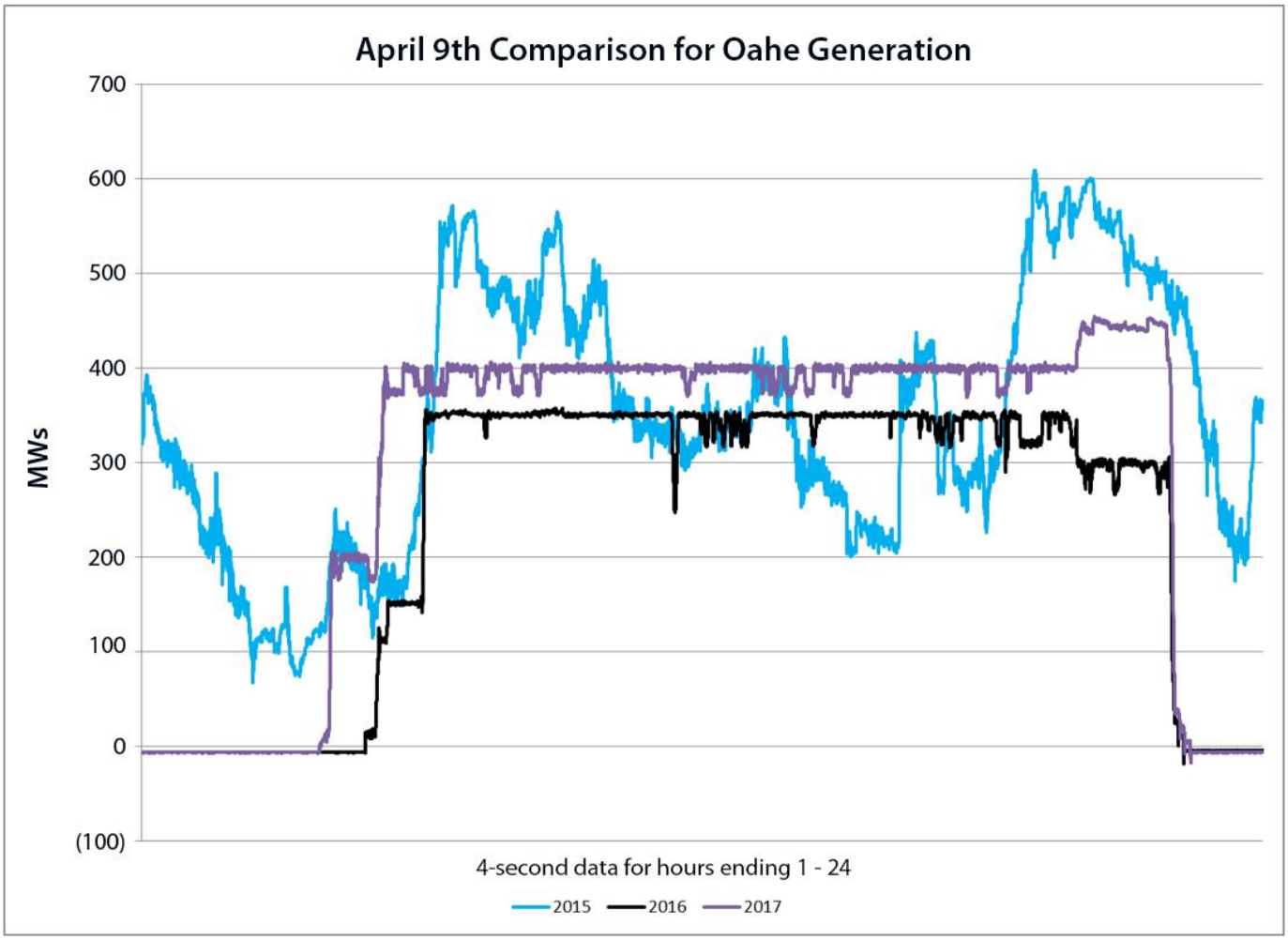


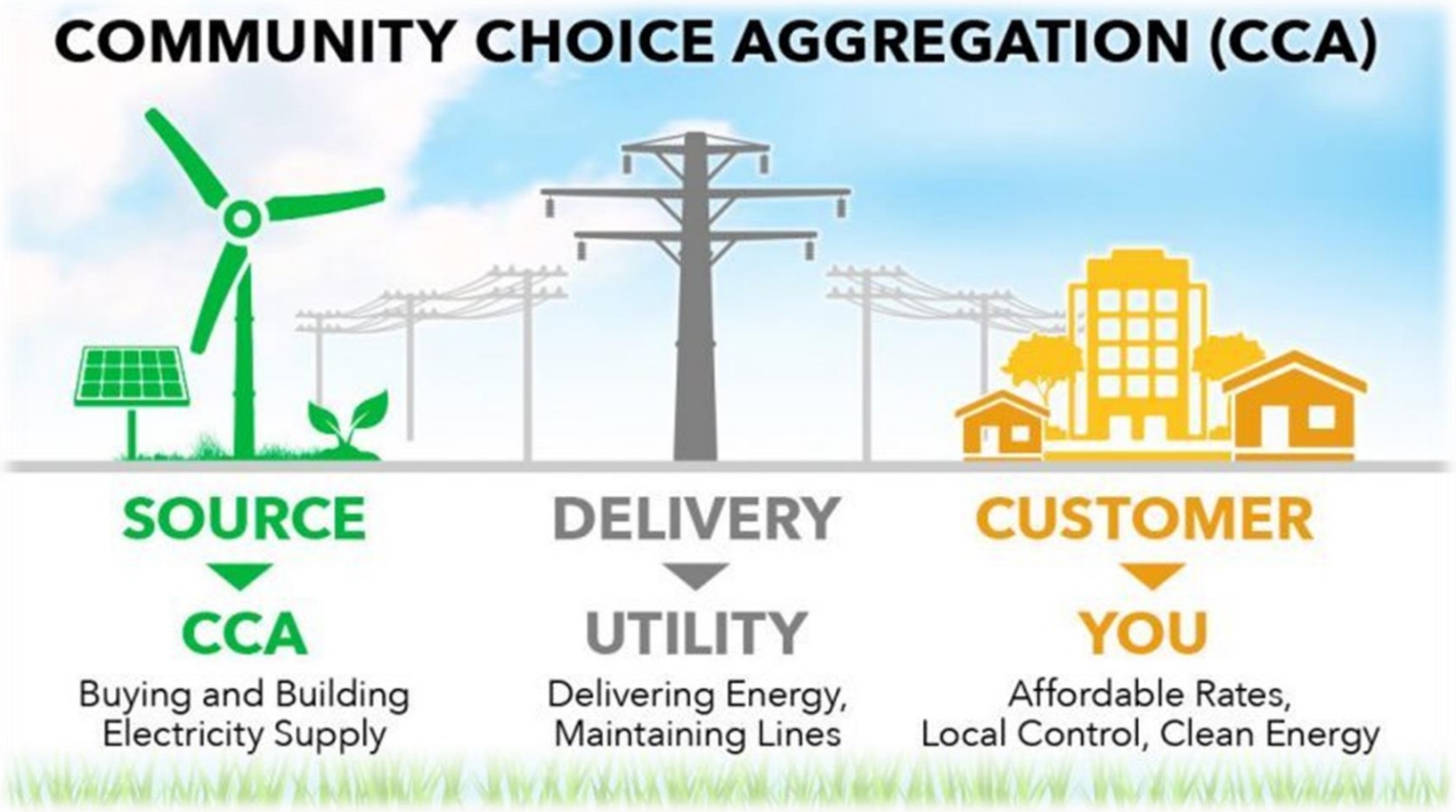
Western Area Power Administration

Industry fears and worries

Challenges of regionalization

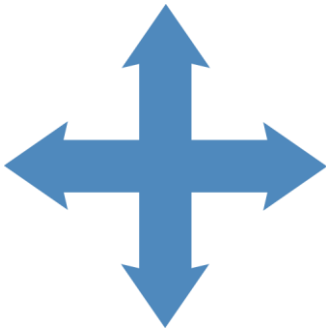
- Inequitable cost sharing
- Governance
- Cost containment
- Industry change abounds
- Risk aversion

Customer experience



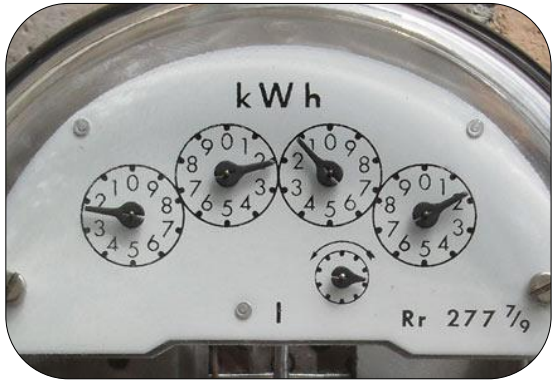
Societal changes

The future nexus



The Weather Channel

Radical thoughts



The kilowatt-hour is dead

Time-of-purchase vs. time-of-use

All-you-can-eat energy

The naysayers

Moving forward will require

Key takeaways

Though inextricably linked, the relationship between water and power continues to change.

Partnership and innovation are key to maximizing the hydro resource.





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